

ABSTRACT OF THE DISCLOSURE

The present invention provides a catalytic system for enhancing perchlorate ion reduction. The system includes one or more titanium assemblies, each titanium assembly is formed by two or more titanium cations. The cations in the assembly are
5 capable of transferring electrical charge to the perchlorate ion, thereby reducing the oxidation state of the chlorine center of the perchlorate ion. The electrical charge transfer between the titanium cations and the perchlorate ion is enhanced disposing the titanium cations and the perchlorate ion are in a moderately polar environment.